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ANNUAL PROGRESS REPORT
YEAR 1: PERIOD 07-15-2014 - 08-08-2015

ONRG GRANT # N62909-14-1-N249

"Microstructure and Mixing: Interactions of Energetic Flow and Eddies with Complex Topography in the Western Indian Ocean"

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SUMMARY:

The project is some 8 months behind schedule due to administrative delays in the funds becoming available: (1) invoices were submitted by UKZN in the wrong currency (2) there were delays at UKZN in setting up the cost centre system and transfer of funds. The funding finally became available to the PI in April 2015. During May – June 2015 the PI visited CSU in the USA to meet with and discuss plans with the USA collaborators. This led to a planned visit by Drs Venayagamoorthy and St Laurent to South Africa in August 2015 where planning was discussed in detail and a field trip was arranged to the launch site near Sordwana Bay. A decision was made to schedule an initial glider deployment for December 2015 and operational arrangements for this are currently underway.

YEAR 1 PROGRESS TOWARDS MILESTONES

Task 1.	Visit by US collaborators to South Africa to discuss, develop and plan the details of the research & field measurements.	Drs St Laurent and Venayagamoorthy visited Durban 12 – 16 August 2015. The following were achieved: (a) Deployment plans were discussed using navigational charts for the area of interest. (b) Confirmed that initial glider launch will operate out of Sordwana Bay (both launch & retrieval) (c) Discussed alternate routes that can include retrieval at southerly locations – Cape Vidal, St Lucia, Richards Bay, and Durban (latter two are major ports with strong infrastructure support if required) ranging up to 300km south of Sordwana. (d) Decided to use the "Starbuck" Slocum G2 with a pumped CTD, thruster, and 350-m rated oil pump _ as most suited for our purpose. To be configured to measure Chi & epsilon, and if possible to add wetlabs ecopuck for Chlorophyl. (e) To use alkaline battery pack to avoid hazmat issues in shipping.
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		<p>(f) Discussed available data regarding strong currents at shelf edge and implications for glider ops.</p> <p>(g) Date of 1st deployment to be 1 – 7 Dec 2015 with retrieval 3 weeks later</p> <p>(h) Discussed details of preparation and deployment procedures</p> <p>(i) Visited UKZN Biology to inspect 8m RIB craft that will be used for glider deployment and retrieval.</p> <p>(j) 1 day field trip to Cape Vidal to inspect the launch facilities (similar to Sordwana).</p>
Task 2	Collate data for the region of interest from SAEON archives	<p>(a) A substantial collection of published information from the ACEP and ASCLME projects has been collated and reviewed.</p> <p>(b) Access to detailed bathymetry for shelf edge canyons in the sordwana area has been negotiated with SAIAB/SAEON – transfer pending.</p> <p>(c) Of particular interest is current data – some limited ADCP transects have been accessed from published data and access to additional processed data has been negotiated and is pending.</p>
Task 3	An offshore survey - to make some basic measurements in the area of interest and develop AUV deployment procedures and skills using local resources.	This task is pending as part of the initial glider deployment in Dec 2015.
Task 4	Glider deployment in collaboration with WHOI	This task is still pending - planned for Dec 2015.
YEAR 1 BUDGET		
Income	\$50 000	Transfer from ONRG – available April 2015
Expenditures	(< \$10 000)	(Not yet collated/audited) Meeting & Field trip expenses Reservations for accommodation, boat hire, vehicle hire
YEAR 2 PROGRESS TOWARDS MILESTONES		
Task 1	Further measurements based on analysis of initial glider data including modeling.	PROGRESS PENDING
Task 2	Publication of results	PROGRESS PENDING
Task 3	Workshop at UKZN to develop future oceanographic collaborations in the region	PROGRESS PENDING

APPENDIX: EXTRACTS FROM PROPOSAL

TASK	SCHEDULE	MILESTONES
YEAR 1		
1. Visit by US collaborators to South Africa to discuss, develop and plan the details of the research & field measurements.	1. 3 mths	1. Detailed plan.
	2. 6 mths	
2. Collate data for the region of interest from SAEON archives	3. 9 mths	2. Initial data report
3. An offshore survey - to make some basic measurements in the area of interest and develop AUV deployment procedures and skills using local resources.	4. 12 mths	3. Deployment
4. Glider deployment in collaboration with WHOI		4. Retrieval
YEAR 2		
1. Further measurements based on analysis of initial glider data including modeling.	1. 18 mths	1. Full data report
2. Publication of results	2. 24 mths	2. Publications
3. Workshop at UKZN to develop future oceanographic collaborations in the region	3. 24 mths	3. Workshop proceedings

ITEM	BUDGET	COMMENTS
1. Glider deployment:	\$50 000	
- Boat & crew		
- Tech support staff		Based on 5 deployment & retrieval events
- Students		
- S & T		
2. International visits	\$30 000	
- 2 x 3 visits to SA		Allow periodic exchanges between PI and US collaborators to develop and execute the proposed research.
- 1 x 2 visits to USA		
3. Scientific Workshop	\$20 000	Organize a regional workshop to bring South African oceanographers and US scientists to develop future collaborations in the Western Indian Ocean.

ITEM	FY14 FUNDING	FY15 FUNDING
Personnel	\$20 000	\$5 000
Consumables (workshop costs)	\$5 000	\$20 000
Travel	\$15 000	\$15 000
Equipment (specify)	\$10 000	\$10 000
Local survey and glider deployment logistics		
Overhead		
Total Costs	\$50 000	\$50 000